ON THE

Properties, Power, & Application

OF THE

Aeolian Engine,

With a Plan and Particulars for carrying it into Execution, upon a Scale that
will embrace all the principal Objects to which it can be applied
with full effect.

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THE
ÆOLIAN ENGINE

IS justly esteemed to be the most comprehensive and important invention of the present age, being an universal, perpetual, and regular mechanical agent, capable of being magnified to an extent of power far beyond the bounds of any engine whatever hitherto known, of being applicable to its purpose in all situations, in town or country, and of being effectually employed as a first mover of all kinds of machinery, either fixed or in loco-motion, that, at present, are driven by fire, water, air, or animals, without the concomitant inconvenience of either.

It is founded upon the most powerful and universal mechanical agent in the hands of mankind, created and perpetually maintained by nature throughout all the countries upon earth, and is at hand in every part of the whole globe, without the smallest expence to mankind.

It will therefore constitute a perfect and complete substitute for the steam-engine, and all machinery actuated by fire, and will prove eminently successful in mills, mines, manufactories, and all hydraulic machinery, which will be furnished with their full and constant power, instantaneously applied, without the smallest expence for fuel or any other matter.

It will be not less regular and constant than

a stream of water, without being confined to situation, or affected by drought, frost, or floods.

It is a power generated and supported by the wind only, which, from its inconstancy, has hitherto been applied to very few mechanical purposes, and those few very imperfect, navigation only excepted. It is by this invention that the power of the wind will be made manageable, regular, and perpetual in machinery, capable of maintaining any power required in its full force, although the wind should cease to blow for many days together.

It will be comprehended in the smallest space of any other power existing, will be applicable to its purpose by very simple machinery, and is the lightest of all substances. From these properties it will be capable of being applied to all kinds of moveable machinery, either upon the road for the conveyance of goods and passengers, or in the field for the purposes of agriculture, and with a degree of expedition hitherto unknown, and in vain to be attempted by horses. The value of the invention, on this account to the proprietors, and to the inland trade and manufactories of the kingdom, will be incalcuble. The country will be relieved from the burthen of supporting ~~one~~ fifteen hundred and fifty thousand horses, the expence of which may fairly be estimated at 50,000,000*l.* per annum. The advantage and convenience of travelling with greater rapidity at a smaller expence, by means totally void of all that cruety exercised upon animals, will be an event of the highest gratification; and as the intercourse between all parts of the kingdom will be highly improved, the value of all kinds of property will be prodigiously increased, the comforts and conveniences of mankind will be augmented, with no permanent injury to any individual.

1,550,000 horses

Cruelty

The **PRINCIPLE** *of this invention is to employ the wind as a first mover, to condense the common air of the atmosphere into a vessel of sufficient strength and capacity; which condensed air is then applied to produce the regular power and motion upon proper machinery adapted to the required purpose.*

For this part of the contrivance the machinery will be so constructed that the smallest impulse upon the sails will not be lost, and the whole power, afforded by the strongest wind, will be collected without waste, whatever may be the density and resistance of the air in the magazine, which will not be permitted to encrease beyond a certain degree.

It appears from the experiment and calculation made in the investigation of the subject, that a vessel of sixteen cubic feet contents, charged with sixteen atmospheres, or sixteen times the natural quantity of air, is equal to the work of one horse for one hour, estimating the labor of a horse to be equal to a weight of three hundred and fifty pounds falling one foot per second, which is found, in general, to be very near the truth; and therefore a globular vessel of thirty feet diameter, containing fourteen thousand feet of air, of the same condensation, will drive an engine of the power of ten horses, six days with one charge, working ten hours each day. With the allowance of one half greater capacity in the magazine, as a compensation for any imperfection that may arise in reducing it to practice.

The power of four horses, going at the rate of ten miles per hour, upon an average, is equal to the weight of one thousand pounds falling one foot per second; and therefore a magazine of six feet diameter, containing one hundred and thirteen cubic feet, charged with sixteen atmospheres, will drive a four horse carriage twenty miles with one charge; and a gine of three feet diameter, charged to the same degree, will drive a carriage, carrying one person, ten miles, with the same allowances as before.

It is also experimentally proved that the ordinary lead pipe that is made for common use is sufficiently strong to conduct the air under the highest degree of condensation required, which affords an adequate means of conducting the condensed air to great distances from the main or stationary machine, either upon the roads or for the business of agriculture.

The value of this invention to the proprietors, and the advantage the public will receive by the facility and cheapness of conveyance, only may, in some measure, be appreciated by the following observation of the immense sum of money that have been expended in the formation of canals and iron rail-ways in various parts of this kingdom, within these few

globe of three feet diameter, charged to the same degree, will drive a carriage, carrying one person, ten miles, with the same allowance as before.

It is also experimentally proved that the smallest lead pipe that is made for common use is sufficiently strong to conduct the air under the highest degree of condensation required, which affords an adequate means of conducting the condensed air to great distances from the main reservoir or magazine, either upon the roads or for the business of agriculture.

The value of the invention to the proprietors, and the advantage the public will receive, by the facility and cheapness of conveyance only, may, in some measure, be appreciated by the following observations of the immense sums of money that have been expended in the formation of canals and iron rail-ways in various parts of the kingdom, within these few years, and of the comparison of this excellent mode of conveyance with that which is now proposed.

It appears by the acts of parliament that have passed within these last fifty years, that the sum of 7,500,000*l.* has been voted, and actually raised within that time, for the purpose of forming canals and rail-ways within this kingdom, the extent of which is upwards of two thousand miles in length, many parts of which has cost from 8 to 10*l.* per yard in digging. The vast mounds of earth and the aqueducts that have been raised, the mountains that have been pierced to convey the water, and the lakes that have been formed, of many miles in surface, for their supply, are truly astonishing. The public spirit of individuals, and the talents and perseverance of ingenious men have been unbounded in this line of improvement, all which affords the clearest demonstration of the vast importance of cheap and easy conveyance to the trade and manufactures of the kingdom.

But still this excellent mode of conveyance which has gained such an ascendancy in the minds of mankind, will fall very short of the perfection to be obtained by the Railway principle applied to this purpose.

The average of the expense of making canals may be stated very near the truth at 5000l. per mile; but the establishment of the Railway conveyance upon the road will not exceed 3000l. per mile; the cheapness of the carriage of goods may, in all cases, be equalled to the carriage by canals with equal advantage to the proprietors, and the expedition doubled. It will possess advantages still superior in the conveyance of passengers, and may be extended for all purposes to great distances, in all collateral branches upon the ca-

[illegible] under the [illegible] of this excellent system of agriculture with that which is now practised.

It appears by the acts of parliament that have passed within these last fifty years, that upwards of [illegible] has been voted and expended within that time, for the purpose of forming canals and railways within this kingdom, the extent of which is upwards of two thousand miles in length, many parts of which has not been [illegible] in the [illegible] earth and the [illegible] have been [illegible], the mountains have been [illegible] the [illegible] lakes have been formed, of [illegible] for their supply, [illegible]. The [illegible] of individuals [illegible] and [illegible] of the [illegible] this line of [illegible] which [illegible] the [illegible] importance of [illegible] and easy conveyance to the trade and manufactories of the kingdom.

But still this excellent mode of conveyanec which has gained such an ascendancy in the minds of mankind, will fall very short of the perfection to be obtained by the Æolian principle applied to this purpose.

The average of the expence of forming canals may be stated very near the truth at 3500*l.* per mile; but the establishment of the Æolian conveyance upon the road will not exceed 500*l.* per mile; the cheapness of the carriage of goods may, in all cases, be equalled to the carriage by canals with equal advantage to the proprietors, and the expedition doubled. It will possess advantages still superior in the conveyance of passengers, and may be extended for all purposes to great distances, in all collateral branches upon the established road, without any previous preparation; and lastly, it will not be affected by droughts, frost, or floods, by which, at least one sixth part of the year, the canals are rendered useless.

The general and average price of the carriage of goods upon canals, is 4*d*. per ton, per mile, and the charge of the carriage of goods from London, to Bristol, Birmingham, Manchester, &c. by the waggon, is 7*s*. per cwt. per hundred mile, which is 1*s*. 4*d*. per ton, per mile.

Ten horses will convey ten ton weight of goods upon a good road three miles per hour, and therefore an engine of the power of ten horses will be capable of conveying ten ton seventy-two miles in twenty-four hours, or, which amounts to the same thing, of driving a carriage, loaded with ten ton, through a stage of twenty miles forward, and bringing the same weight backwards, in fourteen hours and twenty minutes.

An engine of this power, properly established upon the road for the conveyance of goods, and at toll [illegible] with 4d. per ton, per mile, would produce [illegible] per annum, and with [illegible] per ton, per mile, would produce [illegible] per annum.

It appears also, that four horses in a stage coach will convey twelve passengers, viz. six within and six without, seven miles in an hour, together with one hundred weight of luggage, the charge of which is, in the neighbourhood of London, [illegible]

An engine of the power of ten horses, adapted to the conveyance of passengers and luggage at these prices, would produce [illegible] in twenty-four hours, which amounts to [illegible] per annum.

another town, without any previous prepa-
ration; and there would not be afforded by
[illegible] [illegible] [illegible], by which at least
[illegible] time of [illegible] the numbers [illegible]
[illegible]

The general and average speed of the con-
veyance of passengers [illegible] [illegible] per
[illegible] [illegible] [illegible] of goods
[illegible] [illegible] [illegible] Man-
chester [illegible] [illegible] per
[illegible] [illegible] [illegible] per ton.

[illegible] [illegible] [illegible] which I
[illegible] [illegible] [illegible] per hour,
[illegible] [illegible] of the power of ten
[illegible] [illegible] of conveying [illegible]
[illegible] [illegible] [illegible] hour, or,
which [illegible] [illegible] of drawing
[illegible] [illegible] [illegible] stage
[illegible] forward and [illegible] the

same weight backwards, in thirteen hours and twenty minutes.

An engine of this power, properly established upon the road for the conveyance of goods, and in full employ with 4*d*. per ton, per mile. would produce 4380*l*. per annum, and with 1*s*. 4*d*. per ton, per mile, would produce 17,520*l*. per annum.

It appears also, that four horses in a stage coach will convey twelve passengers, viz. six within and six without, seven miles in an hour, together with ten hundred weight of luggage, the charge of which is, in the neighbourhood of London, 1*l*. 5*s*.

An engine of the power of ten horses, adapted to the conveyance of passengers and in full employ at these prices, would produce 72*l*. in twenty-four hours, which amounts to 26,280*l*. per annum.

The full cost of an Æolian engine, equal to the power of ten horses, together with the establishment of it upon the road, for the conveyance of goods and passengers, the distance of twenty miles, is estimated at 10,000*l*. which will be found adequate in the most unfavorable situation and circumstances: the whole of the expence, by the full price of carriage, will, therefore, be returned in the first instance in eight months, and in the second in less than five.

The machinery of the engine will be so constructed as to impress an equal degree of power upon the carriage, whatever may be the density of the air in the magazine. The velocity, therefore, will still continue uniform and equal, whether it is acted upon by condensed air of ten atmospheres or of two, and the power will be variable at pleasure as the circumstances require, suitable to the load and the imperfections of the road.

The first cost of the steam engine, equal to the power of six horses, together with the apparatus and carriages upon the road, for the conveyance of goods and passengers, the distance of twenty miles, is estimated at 10,000*l.* which will be found adequate in the most unfavourable situations and circumstances: the whole of the expense, by the full price of carriage, will therefore be returned in the first instance in eight months, and in the second [illegible].

The machinery of the engine will be so constructed as to impress an equal degree of power upon the carriage, whatever may be the density of the air in the magazine. The velocity, therefore, will be constant, uniform and equal, whether it is acted upon by condensed air of ten atmospheres or of five, and the power will be variable at pleasure as the circumstances require, suitable to the load and the imperfections of the road.

The late attempt to drive a carriage by strong steam, though imperfect in itself, affords an abundant proof of the practicability of performing the same thing by condensed air; as this principle is entirely free from all those imperfections found in the application of steam to the purpose, namely, the cumbrous machinery, the weight of the furnace, fuel, and water, the constant attendance of the fire, with the heat, smoke, and expence of fuel, all of which are unnecessary upon the Æolian principle; moreover the condensed air may be conducted to great distances by tubes, so as to renew the charge of the magazine in motion every half hour, if required, and will continue its force unabated when it is not in action, which steam will not do; it is also ready the instant required, and may be magnified to a degree of strength, by artificial means, approaching to infinity.

PROPOSALS

For carrying into Execution the Invention of the

ÆOLIAN ENGINE,

THE PATENTS

for which are in the Hands of

Mr. GEORGE MEDHURST,

DENMARK STREET, SOHO.

THERE are two patents taken for the Æolian Engine, the first relates to the application of it to all fixed machinery, such as mills, manufactories, and hydraulics, and is intended as a substitute for the steam engine.

The second patent relates to the application of it to all machinery in loco-motion, such as the driving all kinds of carriages upon the road, for conveying goods and passengers without the aid of horses, and also to effect the principal part of the business of agriculture. It is therefore designed as a substitute for animal power.

It is intended to raise the sum of 50,000*l.* to carry into execution and conduct the business of this concern upon the most extended scale; and with this view to divide the interest arising from the patents, or from the invention, into two equal parts or divisions, and to dispose of them by subscription in the following manner.

ARTICLE I.

The first division shall be subdivided into fifty equal shares, and sold for 100*l.* each share, 10*l.* to be deposited at the time of subscribing, into the house of Messrs.

bankers

when the subscriber shall receive a receipt for the same from the present proprietor, which shall entitle him to an equal dividend of the profit arising from the concern [illegible] as is therein expressed, upon his paying the remainder of the subscription, as expressed in the following article.

ARTICLE II.

The money deposited shall be appropriated to the building a complete and efficient engine upon a small scale, to demonstrate to the public the practicability of the invention in fixed machinery as expressed in the first plan, and five of the subscribers shall be chosen as directors to conduct the application of the money to the purpose intended.

ARTICLE III.

As soon as the first five deposits are made, amounting to 100l. the building of the engine shall commence, by and under the direction of the inventor, who shall receive the money

profit arising from the concern for each share, as is therein expressed, upon his fulfilling the remainder of the subscription, as expressed in the following article.

ARTICLE II.

The money deposited shall be appropiated to the building a complete and efficient engine, upon a small scale, to demonstrate to the public the practicability of the inventoin in all fixed machinery as expressed in the first patent, and five of the subscribers shall be chosen as directors to conduct the application of the money to the purpose intended.

ARTICLE III.

As soon as the first ten deposits are made, amounting to 100*l.* the building of the engine shall commence, by and under the direction of the inventor, who shall receive the money for the same from the directors, as the work advances, or as future deposits are made.

ARTICLE IV.

When the engine is finished and adapted to an adequate and efficient purpose, with success in fixed machinery, the engine shall then be adapted and applied to a carriage, prepared for that purpose, so as to produce the full effect designed by the second patent, and the subscribers shall be called upon to advance the remainder of their subscription, viz. 90*l.* for each share, to be paid into the house of Messrs. as before, for the use of the Æolian Company; the money to be paid by instalments of 10*l.* each, as called for by the directors, to defray the expence of preparing a carriage and adapting the engine to it, so as to produce the designed effect.

ARTICLE V.

As soon as the carriage is completely finished, and the engine supplied with success, both in fixed and moveable machinery, the second division of the interest and profit arising from the invention shall be offered to sale, divided into fifty equal shares, at the price of [illegible] each share, or any greater sum that such advanced state of the business shall appear eligible to the directors. Each subscriber to pay [illegible] at the time of subscription, and the remainder by instalments of [illegible] each, as called for by the directors. The money raised by the sale of the shares of the second division shall be the property of the [illegible] Company, and shall be appropriated to establish and extend the business of conveyance and of agriculture upon this principle, and of constructing engines for mills, mines, manufactures, &c. upon such terms as shall be agreed and determined upon by a general meeting of the subscribers.

ARTICLE V.

As soon as the carriage is completely finished, and the engine applied with success, both in fixed and moveable machinery, the second division of the interest and profit arising from the invention shall be offered to sale, subdivided into fifty equal shares, at the price of 1000*l.* each share, or any greater sum that, in this advanced state of the business, shall appear eligible to the directors. Each subscriber to pay 100*l.* at the time of subscribing, and the remainder by instalments of 100*l.* each, as called for by the directors. The money raised by the sale of the shares of the second division shall be the property of the Æolian Company, and shall be appropriated to establish and extend the business of conveyance and of agriculture upon this principle, and of constructing engines for mills, mines, manufactories, &c. upon such terms as shall be agreed and determined upon by a general meeting of the subscribers.

ARTICLE VI.

As soon as there are ten deposits made for shares of the second division of the patents, amounting to the sum of 1000*l*. the business of the company shall commence upon any eligible offer that may be made, or in any other manner that the directors may think proper, the expence of which shall not, by estimate, exceed the sum of money deposited; and the dividends arising from the profits of the business shall be paid to the subscribers, for the time being, quarterly, viz. on the 24th of March, 24th of June, 29th of September, and 24th of December, when the book of the company shall be open for the inspection of the subscribers, and the directors shall determine the price of each share of this division, if any remain unsold, for the next quarter ensuing.

ARTICLE VII.

Three new directors shall be chosen annually, by the subscribers, in the place of the

[illegible]

ARTICLE VIII.

An application shall be made to parliament in due time, either for a further extension of the patents, or for an exclusive charter to secure to the company the possession of the profits arising from the business for ever.

ARTICLE IX.

Instalments not being paid within one month after due notice from the directors being given, the money paid for such share or shares shall be forfeited to the company, and the shares resold.

Subscriptions are received by Messrs.

and by the Manager and Patentee, No. 1, [illegible] Street, Soho, where the patents, drawings, specifications, and prospectus may be seen.

three first chosen, or any other three that may chuse to resign.

ARTICLE VIII.

An application shall be made to parliament in due time, either for a further extension of the patents, or for an exclusive charter, to confirm to the company the possession of all profits arising from the business for ever.

ARTICLE IX.

Instalments not being paid within one month after due notice from the directors being given, the money paid for such share or shares shall be forfeited to the company, and the shares resold.

Subscriptions are received by Messrs.
and by the Inventor and Patentee, No. 1, Denmark Street, Soho, where the patents, drawings, specifications, and particulars may be seen.